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ABSTRACT

Described is an On-Line Budget Information Retrieval System developed at Southern University at Baton Rouge to upgrade financial management capability. The system is designed to provide top administrators, deans, department heads, grant directors and finance or accounting staff with information less than 24 hours old. It is noted that the system is intended to be used by individuals with no computer systems background. Explained are performance requirements, system design, query language specifications and terminal display formats. Appendixes contain a Data Element Dictionary, an Account Code Reference Table, and a glossary. (GW)

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AN

ON-LINE BUDGET INFORMATION RETRIEVAL SYSTEM DESIGN

Developed for
Southern University

by

Jesse L. Smith, Analyst
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Baton Rouge, Louisiana 70813

January 15, 1975

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Technical Assistance Consortium
to Improve College Services

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INSTITUTE FOR SERVICES TO EDUCATION, INC.

The Institute for Services to Education was incorporated as a non-profit organization in 1965. Its initial sustaining grant came from the Carnegie Corporation. ISE is an educational research and development organization, specializing in the problems of equalizing educational opportunity. ISE is involved in the design of educational materials for students and in teaching strategies to decrease attrition among educationally neglected Black Americans.

The curriculum development work requires long term interaction with college presidents, other administrators and faculty involved in dealing with educationally neglected college entrants. ISE has developed close insights into the obvious and subtle problems of predominantly Black student populations in large and small, urban and rural settings.

The research program of ISE has been involved with annual surveys of the academic, demographic and motivational characteristics of students, with particular emphasis on entering freshmen. This has required large scale collection, management, file development and analysis of educational data from financial aid data, to income distributions, to self-concept, to perceptions of their educational environment. This experience has been instructive in the subtleties of interpreting quantitative data collected on Black populations.

MANAGEMENT INFORMATION SYSTEMS DIRECTORATE

Management Information Systems is one of the two TACTICS programs of ISE. Its goals are to improve the quality of information on the historically Black colleges and universities participating in TACTICS and through this process assist in the improvement of the information management procedures on the individual campuses. Its major accomplishments to date include: (1) The development of an automated data base which provides a manipulative capability to handle key data elements on enrollment degrees granted, and revenue/expenditures on some 113 institutions; (2) The establishment of a cooperative data collection and reporting approach between the United Negro College Fund (UNCF) and the office for the Advancement of the Public Negro College (OAPNC). This effort significantly reduces the data collection demands on the college; and (3) The sponsoring of Summer Information Management Training Institutes for college administrators and researchers responsible for data collection. Out of this program should come accurate appraisals of the Black colleges in terms of growth patterns, internal enrollment and degree patterns, patterns of financial support and trends in the growth or non-growth of that support. With the management orientation of higher education, this program is being pushed hard to become valuable to all small colleges in mastering data collection and manipulation programs which undergird sound management decision making. MIS is developing model procedures for effective data flow and management reporting. Documentation based on experiences with TACTICS institutions will be made available to all institutions in the consortium.

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Assisting Agency	TACTICS Components
The Institute for Services to Education (ISE)	■ Cooperative Academic Planning (CAP)
	■ Management Information Systems (MIS)
The Robert R. Moton Memorial Institute, Inc.	■ Moton Consortium on Admissions and Financial Aid (MCAFA)
	■ Moton College Service Bureau (MCSB)
The Phelps-Stokes Fund	■ Management Development Program (MDP)
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All Assisting Agencies have programs other than their TACTICS involvements.

The unique distinction enjoyed by TACTICS (Technical Assistance Consortium To Improve College Services) stems from the continuous cooperation between the agencies, components and coordinating office where all are working together for the good of their colleges and universities. This thrust is represented by the unifying TACTICS logo displayed by all TACTICS component's publications.

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MANAGEMENT INFORMATION SYSTEMS
INSTITUTE FOR SERVICES TO EDUCATION, INC.

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PREFACE

Fiscal accountability is a key issue in the management of the educational enterprise. In large part, management decisions may be measured by their financial impact. Such impact is more properly assessed prior to decision implementation. Effective fiscal decision making, then is enhanced through the availability of current, accurate budgetary information.

The Southern University at Baton Rouge (SUBR) Computer Center proposed the design of an On-Line Budget Information Retrieval System to upgrade the SUBR's financial management capability. While the existing accounting system provided monthly budget summary reports, this system was designed to provide top administrators, deans, department heads, grant directors, and finance/accounting staff with information less than 24 hours old. The significance of the timing factor is the cost-effectiveness of implementing a 24 hour batch update system versus a system with on-line updating.

The Management Information Systems component of TACTICS (MIS/TACTICS) provided funds to partially support the design of this system. It is hoped that the design documentation will serve as a stimulus and a guide to other institutions contemplating improvements in their financial management systems.

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I. INTRODUCTION

This system is designed to provide current budgetary information for all levels of university administration, including top university administrators; deans and administrative personnel; and department heads, grant and program directors. In an effort to assist these individuals in their various capacities, historic budgetary information is also provided. This information is provided in summary form only, and dates back over a five-year period. The reasons for placing these restrictions on available information are:

- a. To prevent the data base from becoming saturated with historic information in detailed form.
- b. To accommodate university administrators who felt there was no need to maintain historic information in detailed form.
- c. To accommodate university administrators who expressed a need to be able to review budgetary information over at least a five-year period.

The information that is deleted because of the retention limitation of five years is transferred to off-line storage for later reference through a batch environment.

The design contains some specifications that were considered to be trade-offs because of the unique requirements of Southern University and because of improvements made with reference to the now existing batch system. Most of the administrators interviewed wanted to expand the retrieval concept by suggesting that other applications be considered. In an effort to comply with these suggestions, the data base is structured in such a way as to allow flexibility in its use.

The specific design objectives of the On-Line Budgetary Information Retrieval System are to provide:

- a. Current and historic budgetary information for university administrative officials;
- b. Fast terminal response without a diverse effect on the batch environment;
- c. A terminal command language (query language) which allows easy user access to all system features;
- d. Elimination of paper reports and search time required to find historic information provided by the existing batch system;
- e. Reflection of the interim status of the budget of any organized university activity within a 24-hour time frame;
- f. A flexible data base to afford easy use with future information systems;

- g. Terminal use security to prevent unauthorized use of the terminal for the retrieval of budgetary information.

There are no direct references made to the hardware or software environment needed to implement the design. Instead, general references are made to those features that should or should not be available in the operating system and the computer system.

II. MANAGEMENT USER DESCRIPTION

This design of an On-Line Budget Information Retrieval System provides financial managers in an educational environment with the following advantages:

- a. Current financial information relative to the status of various budgets;
- b. Historic financial information from which spending trends can be analyzed;
- c. Twenty-four-hour availability of information;
- d. Individual payroll information to support the budgetary line item for salaries;
- e. Easy access to vital information whether in detail or summary form;
- f. Elimination of bulky reports and storage problems;
- g. For ease of comprehension, clear and concise display images, similar to existing reports.

These advantages are implemented without major changes to existing procedures. The transactions being processed as a part of the current procedures are the identical transactions that are used to keep the retrieval information up-to-date. This design feature eliminates any manual duplication of effort that might have resulted from other methods of processing.

The method that an individual uses to request the display of information is designed to be used by individuals with no computer systems background. This feature caters to those financial executives who sometimes work after hours and have no technical help available. These people have the option of operating the equipment with ease. The problems that may arise from incorrect requests are clearly indicated through error messages generated by those parts of the system designed to perform checking procedures.

The images that are provided the user, by way of the terminal display screen, are clear and concise, with proper identification of all items of the image. Most of the information provided by the system bears some similarity to the existing documents prepared in our budgetary cycle. The basic improvement (change) is the elimination of actual transaction codes wherever possible. Instead of providing an image of a budgetary line item with a series of codes, actual names or abbreviations are used, thereby eliminating any cross-reference search that may be employed to understand the image.

The payroll information produced by the system is basically a support item. Those individuals who question certain aspects of the budgetary line item for salaries have the capability of requesting individual employee payroll information. This information can also be used to:

- a. Support the budgetary line item for salaries (already stated);

- b. Provide information relative to each employee's rank and experience;
- c. Provide a ready reference to employee personnel information;
- d. Provide a reference to employee earnings and earning sources.

This basic information is of interest to other potential users. The personnel office, the payroll section of the comptroller's office, staff in the office of the vice-president of financial affairs who deal with salaries, and even the president of the university all have a need for access to current information on employees. This design can provide the information.

The implementation of this design will greatly enhance the capabilities of university administrators who are financially responsible. It will enable those individuals to make decisions to aid the university in maintaining financial balance. Although the flexibility exists, no provisions are made to allow "financial projections" by computer. The information needed to accomplish the task is available and can be analyzed. The design will require equipment and manpower for implementation; but, benefits to be derived are well worth the effort involved.

III. PERFORMANCE REQUIREMENTS

In order to define an effective system, emphasis must initially be placed on those items that should be provided by the system. Individuals who are designated users of the system can best determine the beneficial items. User involvement was solicited through a series of interviews, from which ideas and suggestions were obtained. The interviews were conducted in an organized manner with special reference made to the management level of the interviewees. The items identified as performance requirements of this system are:

- a. Response time must be limited to a maximum of 10 seconds;
- b. Budgetary information must be provided for defined departmental groups within a college;
- c. The mode of access (query language) to the budgetary information must be non-technical;
- d. System recovery facility must be adequate enough to allow recovery from system failure;
- e. Terminal security must be developed;
- f. Display screen formats must be legible and compatible with existing reports;
- g. The query language must contain the facility to review information erased due to the number of lines available on terminal screen in a single display;
- h. Data base update facility must be able to allow recovery from an erroneous transaction date;
- i. Update facility must be provided in a batch, remote job entry, or an on-line environment.

Each of these requirements is explained in detail in the following paragraphs.

The Response Time Requirement is imposed on the system in an effort to maintain an adequate "user interest span." An individual who has to wait 30 seconds for a response to a query may lose interest in the results. This requirement dictates some necessities relative to the hardware and software involved:

- a. The CPU must have ample real storage (at least 1/2 mega byte);
- b. Communication lines must be full-duplex and conditioned to eliminate noise;
- c. The terminals must be "intelligent;"
- d. Communication lines should be direct rather than dial-up;
- e. The terminal hardware (display consoles, modems, card readers, line printer, etc.) must be reliable.

The Predefined Academic Group Requirement refers to a logical grouping of organized university activities into colleges. For example, this system should provide summary budgetary information for all of the organized activities in the College of Science or the College of Arts. These organized activities should include federal funds (grants) awarded to various departments of the college.

The Mode of Access to the budgetary information must be nontechnically oriented to afford personal use by university administrators. The commands necessary to invoke a meaningful response should be as clear as possible. The language should be such that word phrases and/or codes may be used to inquire about desired information.

System Recovery Facilities should be sophisticated enough to allow redevelopment of the data base through any time before a system malfunction. In developing this feature, care should be exercised not to channel too much time and effort in this direction.

Any on-line retrieval system of this nature must be security oriented. Here again, the degree of sophistication in maintaining a secure system must not overshadow the final goal, the retrieval of budgetary information. The "log-on" or "sign-on" procedure is one area where efforts should be made to eliminate unauthorized inquiries.

The Output Derived from the retrieval system should be so clear and concise that immediate inspection will provide the answers needed. Basic budgetary reports were generally agreed on as a model for these outputs. The reports referred to are analysis of expenditures and encumbrances (see Figure 1); and interim budget report (see Figure 2).

Analysis of expenditures and encumbrances shows the detailed transactions that affect the budget of each organized university activity. The interim budget report shows, in summary form, how those detailed transactions affect the amounts allotted to each budgetary line item of that organized activity. Only those organized activities that disburse state appropriated or federally awarded funds are reported.

The Query Language must allow the user to review lines of information lost because of lack of display screen capacity. If a user request requires more lines than can be displayed on the terminal screen, some information must be removed. The information that is removed from the screen because of this limitation should be readily available to the user on request.

Error Recovery Facilities must allow the redevelopment of the data base prior to any maintenance performed. This recovery facility will serve as a safeguard to any problems that may arise from on-line or batch updates.

The system must be able to provide various means of Maintaining the Data Base. Updates to reflect changes in field contents, as well as to reflect current budgetary activity, are essential. These facilities should be provided on-line and through conventional batch procedures.

IV. SYSTEM DESCRIPTION

The On-Line Budget Information Retrieval System is designed to aid administrators of the university system by providing current and/or historic budgetary information. In order to do this, the designated users of the system must identify items that are important to sound financial management. Those items, along with some computer system requirements, are:

- a. Response time must be limited to a maximum of 10 seconds;
- b. Budgetary information must be provided for defined departmental groups within a college;
- c. The mode of access (query language) to the budgetary information must be non-technical;
- d. System recovery facilities must be adequate enough to allow recovery from system failure;
- e. Terminal security must be developed;
- f. Display screen formats (system output) must be legible and compatible with existing reports;
- g. Query language must contain the facility to review information lost because of the lack of lines available on a display screen;
- h. The data base update facility must allow recovery from an erroneous transaction update.

The above listed items are explained in detail in the section entitled "System Requirements."

The basic system operational flow may be summed up in the following manner:

On-line

Enter information request

Edit request for accuracy and restrictions

Retrieve and format information requested

Display requested information

Await next request (return to first step)

Batch

Data base maintenance

The general flow chart in Figure 3 shows a pictorial view of the basic system operational flow.

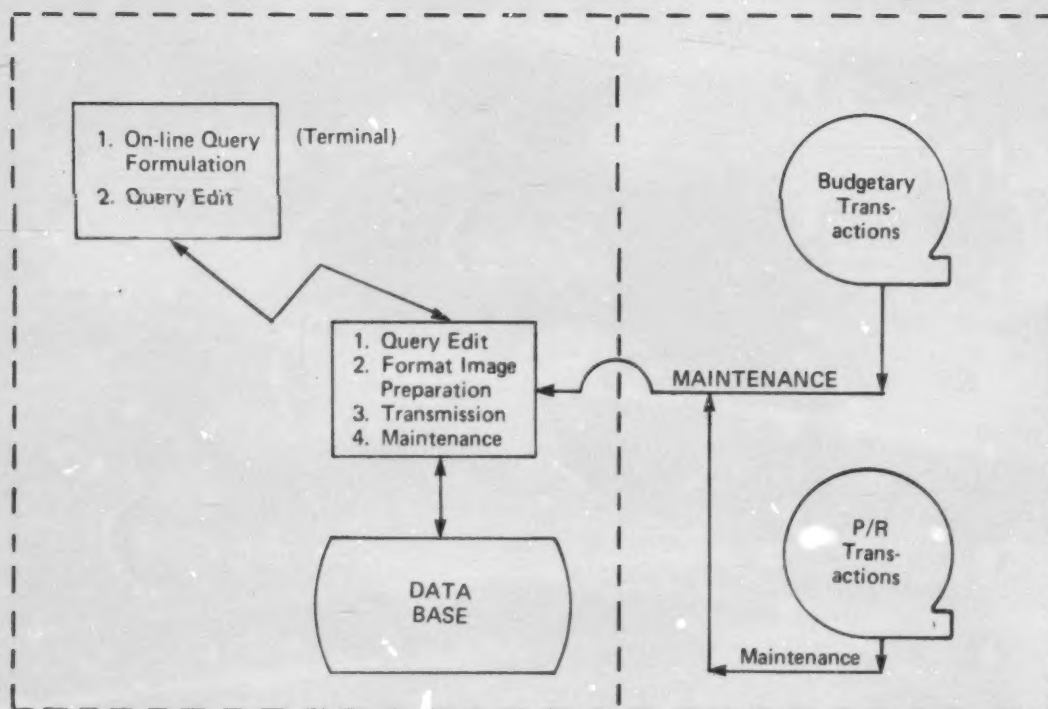


Figure 3. On-Line Budget Information System Operational Flow

On-Line Operational Flow.—Enter Information Requested—A query language provides the means by which the terminal user requests the various services of the system. A user-oriented query language is designed which adheres to the requirement of being nontechnical. (See the section on query language specifications for more details.)

The facilities of the system are available to the user only after the proper "log-on" procedures have been performed. Each user will be given a unique identification code that informs the system of the extent to which budgetary information may be requested. This means that users will be restricted to retrievals that apply to their particular needs. User identification codes will be changed on a regular basis to add additional measures to security procedures. The system will monitor terminal use for the purpose of inactivating a terminal after a certain period of inactivity.

A sample of the steps that may be followed to make the facilities of the system available follows:

- Step 1. Power on (if not already on)
The system responds if communication is properly established
COMPUTER READY 12/31/74 - 00:00:00 HOURS
ENTER USER IDENTIFICATION

- Step 2. ? 123456789 (EOT) (typed by user)
USER ID INVALID
ENTER USER IDENTIFICATION
- Step 3. ? 123456780 (EOT) (correct ID entered by user)
USER ID VALIDATED
DISPLAY (AND UPDATE) FUNCTION ACTIVE
- Step 4. ? D 2073 (EOT) (entered by user)

Edit Request for Accuracy and Restrictions.—The query formulated in step 3 goes through a query edit for accuracy and restriction phase. The request is pre-edited at the terminal, and messages of a syntactical nature are generated if syntax errors are present. The request is then transmitted to the "edit" function of the retrieval system for a "restricted retrieval" check. If the information desired is not available to that user, this message is sent to him and he is allowed to formulate another request.

The pre-edit feature of the terminal is a program function and not a hardware function, thereby making the command structure flexible and relatively easy to modify. This flexibility also prevents the terminal from becoming an "on-line budget information retrieval system terminal." That is to say, the terminal is not locked into being a rigid terminal that can only be used for one application. All of the edit functions are not at the terminal because of the obvious overload that could occur. "Log-on" verification and the "restricted retrieval" check are functions of the retrieval system. These two edit procedures were chosen because of the nature of the edit and the tendency to maintain, in the data base, segments of information relating to user identification.

Retrieve and Format Information Requested.—Once the edit phase has been completed, the appropriate display format is chosen and display screen images are created. These images are formulated in a "scratch pad" before transmitting, to allow the user the flexibility of scanning his information via the "space F" and the "space B" commands. (See the section entitled Display Formats for more detail on retrieval images.)

Display Requested Information.—The transmission of information is not dependent on the completion of the "scratch pad" images. As lines of the request are completed, they become eligible for transmission along the communication line. This facility is made available to adhere to the response time requirement mentioned in the section entitled "System Requirements." All available techniques in data transmission should be used to afford fast response time and accurate transmission, including "blank character suppression."

Await Next Request.—At the completion of transmission or at the forced completion of transmission, the system will send a message to the user indicating that it awaits query formulation. The message is a user prompt cue so that a continuity of user/system procedures might be maintained. At this point in the scheme of procedures, the system monitors terminal inactivity. If no valid activity is perceived at the terminal, then an automatic "shut down" procedure will be activated. This procedure will involve the transmission of a message to the terminal in question indicating the nature of the system action. In order to ready the terminal for activity the user must initiate the "log-on" procedure again.

Batch.—Data base maintenance, one of the highest ranking procedures in the system, posts up-to-date budgetary information. This system is designed to allow updates from three different sources: on-line, remote job entry, and in-house batch. The flexibility of maintenance exists for all three sources. However, this design involves only the third source, data base maintenance through the in-house batch method.

Data Base Maintenance.—Figure 4 shows the basic flow of the maintenance necessary for the retrieval system. All of the budgetary information needed to maintain the data base is captured in a file labeled the "daily accounting all-transaction file," which contains the transactions processed each day. These transactions are processed as they are submitted to the computer center and are merged with any previous transactions for the necessary reports at the end of the month, our now existing budget reporting period. (See the flow chart in Figure 5 for an overview of the procedure). The maintenance procedure involves using the transactions for that day to perform the necessary maintenance before merging with previous day's transactions. The transactions for the day (5:00 pm cutoff) will be used to perform the maintenance. As the maintenance procedure is being performed, a modified "check-point" is done to facilitate system recovery procedure. This "check-point" is in the form of recording all the before and after images of data base segments that were changed on magnetic tape. Each "check-point" contains these images, along with the time and date of maintenance.

The "RJE" maintenance procedure could be implemented through the proposed maintenance procedure with few if any modifications, provided that the necessary equipment is present at the RJE site.

The maintenance procedures do not require any modifications to the existing budgetary cycle. Instead, a basic outlet for processed transactions is provided. Daily transactions that would normally be merged onto a composite file are first entered into the retrieval system's maintenance procedures and then merged onto a composite file. The same analogy holds for payroll maintenance procedures. The only difference is that payroll register records are not merged onto a composite file, but are maintained separately for individual pay period reporting.

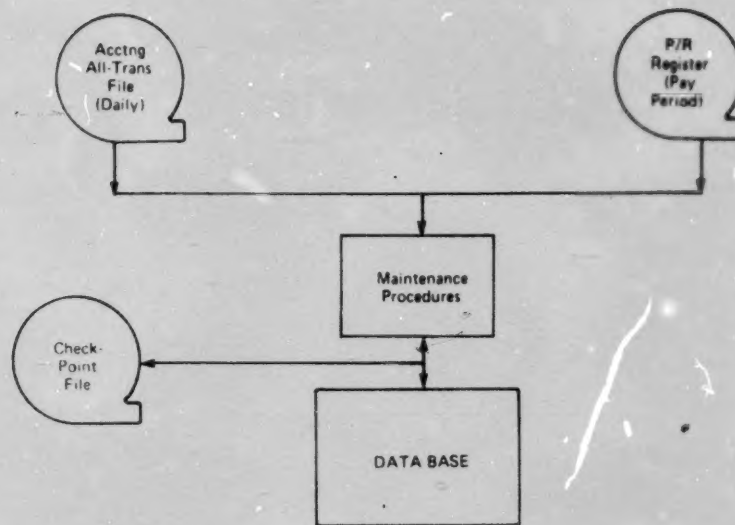


Figure 4. Retrieval System Maintenance Flow

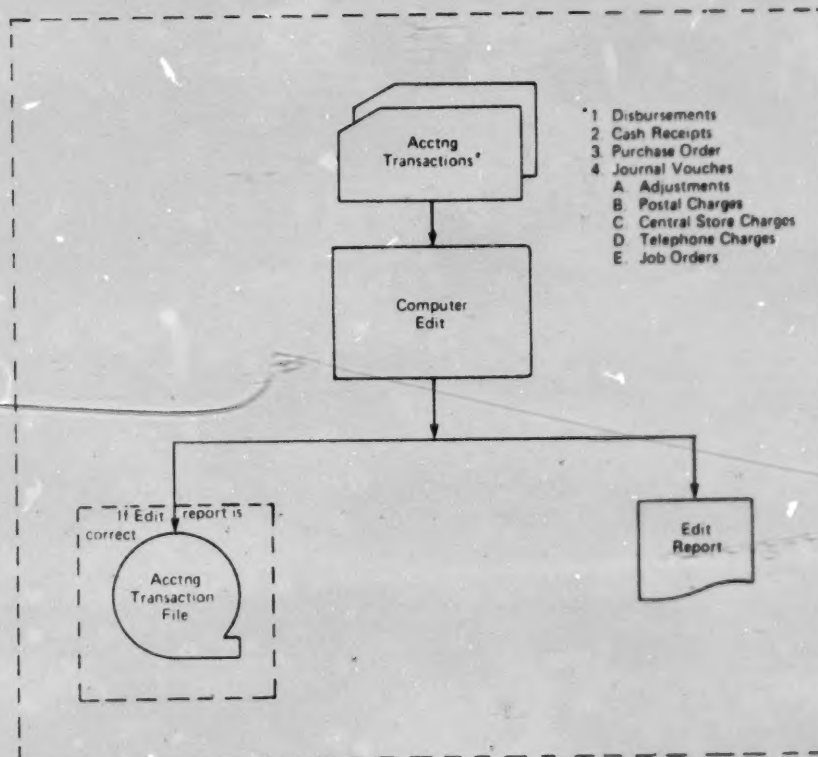


Figure 5. Overview of Transaction Processing Procedure

Payroll Maintenance. -- The payroll register file shown in Figure 4 represents a collection of earning records for individuals employed by the university. The frequency of maintenance involved with these transactions will be biweekly because of the university's pay period ending dates. (Figure 6 shows the procedures involved in the creation of the payroll register). Again the "check-point" technique is employed in order to facilitate system recovery.

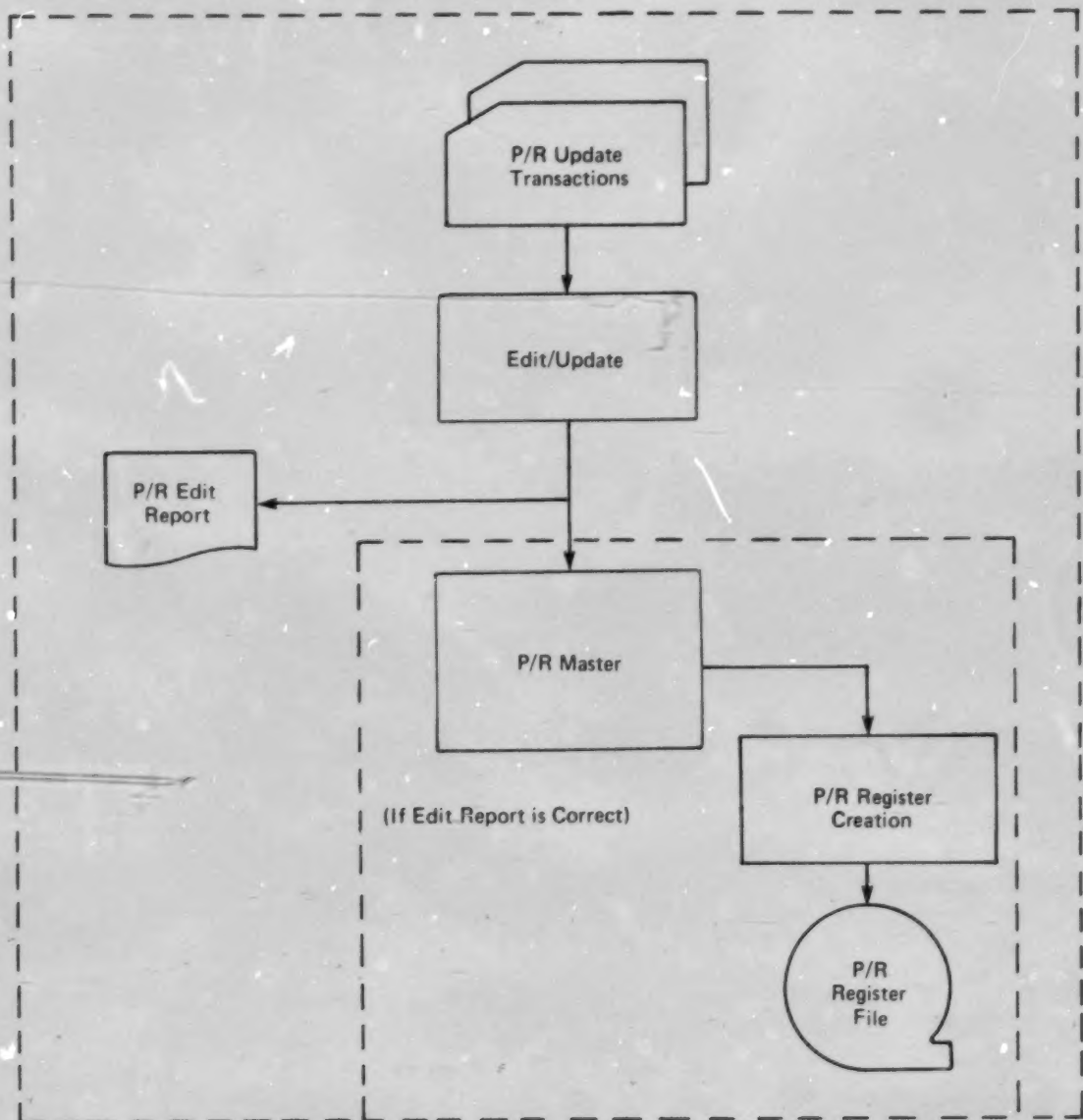


Figure 6. Create Payroll Register Procedure

Element	Description
1. Entry code	Alphanumeric (2 characters)
2. Date	Numeric (6 characters)
3. Reference number*	Alphanumeric (5 characters)
4. Invoice number	Alphanumeric (9 characters)
5. Check number	Numeric (6 characters)
7. Payee name	Alpha (25 characters)
8. Account code*	Numeric (17 characters)
9. Amount	Numeric (10 characters)
11. Check date	Numeric (6 characters)
12. Payee identification*	Alphanumeric (9 characters)
13. Academic classification code*	Numeric (2 characters)

*Retrieval keys

In an effort to retrieve payroll information, another set of elements is needed. They are as follows:

Elements	Description
1. Entry code	Alphanumeric (2 characters)
2. Date	Numeric (6 characters)
3. Name*	Alpha (22 characters)
4. Social Security number*	Numeric (9 characters)
5. Primary earning source	Numeric (7 characters)
6. Secondary earning source	Numeric (7 characters)
7. Rank/job title	Alphanumeric (5 characters)
8. Degree	Alphanumeric (5 characters)
9. Marital status	Alpha (1 character)
10. Employee class	Alpha (1 character)
11. Work experience	Numeric (9 characters)
12. Primary earning source (Last year/current)	Numeric (16 character)
13. Secondary earning source (Last year/current)	Numeric (16 characters)
14. Total earnings (Last year/current)	Numeric (16 characters)
15. United Givers contribution	Numeric (7 characters)
16. Insurance contribution	Numeric (7 characters)
17. Retirement system	Alpha (20 characters)
18. Employee address (Home/alternate)	Alphanumeric (150 characters)

*Retrieval keys

The Data Element Dictionary in Appendix A gives a more detailed picture of these elements and their purpose.

The existing payroll and accounting procedures here at Southern lend themselves very well to the development of this system. No time will be used in making major modifications to the basic structure. Some of the intended users of this system voiced concern over the possible duplication of effort that might result from this design. Restraints were imposed on the design such that the basic budgetary and payroll transactions now employed are used to maintain this on-line system. The advantage is that there is no need to wait until the existing budget reporting cycle is complete to obtain the status of any budget. The effect of a transaction can be posted to the data base within a 24-hour time period, giving financial administrators a more up-to-date budgetary picture.

Budget Summary Images.—There is additional time involved in the update procedure because of the provisions made to maintain budgetary summary images in the data base. These images are developed and maintained to afford fast response time by allowing retrieval of a single summary image, instead of enacting a summarizing procedure to obtain a budgetary amount. In other words, there is no need to accumulate a total of all the detail transactions in order to obtain a figure for a budgetary line item. The advantage of fast response time clearly overshadows the disadvantage of the extra machine cycles needed to perform maintenance of several records in the data base.

Transaction Code Structure.—The information segments available to update procedures must contain all of the information needed to formulate meaningful responses to queries. In order to lay out those segments, there must be an initial understanding of the present code structure. The current unit of code is 15 characters in length. (See Figure 7). Each field of the existing code has expansion space built into it. However, for the sake of unforeseen expansion, one-character areas preceding and following the structure are added. This structure lends itself very well to the requirements of the system. No attempts will be made to effect radical change to this code. The following list represents the elements needed in the data base to provide appropriate responses to budgetary queries:

CURRENT TRANSACTION CODE STRUCTURE

6	1	2		3		4						5	6

The numbering scheme in Figure 7 corresponds to the numbered explanation.

The fields that these 15 characters comprise are:

1. Agency Code — Classifies transactions by campuses
2. Fund Code — Classifies transactions as those affecting money received from state sources, federal sources, self-generating sources, or others
3. Account Code — Classifies transactions as expense items, income, encumbrances or others
4. Department Code — Identifies the organized university activity to which the transaction applies
5. Allotment Code — Identifies the budgetary line item to which the transaction applies
6. Expansion Space — Additional space for expansion of code

Figure 7. Current Transaction Code Structure

V. QUERY LANGUAGE SPECIFICATIONS

The command structure developed for this design is presented in this section. Implementation may be involved because of the options available, but the basic purpose of its structure is maintained. Its simplicity is shown in the flexibility of formulation. The fact that an individual has the option to use actual codes or alphabetic codes to formulate a request removes the technical restraint seemingly presented in the structure of each command. The following repertoire of commands are available to the terminal user:

DISPLAY:	This is the basic service of the retrieval system. This command, in its various forms, provides the user with the desired budgetary information.
UPDATE:	This command is envisioned as the facility for on-line maintenance of the data base. Its format is similar to that of the display command. This design makes provisions for this command, but does not attempt to implement it at this time.
PRDSPY:	This command provides the user with the facility to obtain information regarding individual payroll earnings. This is designed as support for the budgetary line item representing salaries.
MONITOR:	This command serves as an aid to the office of the comptroller in allowing this office to interrogate the system in determining the existence of certain types of budgetary information. This is a command for determining if certain transactions have been processed through the maintenance cycle.
SPACE F:	This command provides the terminal user with the ability to bypass lines of display in an effort to obtain the desired information faster.
SPACE B:	This command allows the terminal user to review lines of information that have been lost due to terminal line capacity.
PAUSE:	This is a system procedure command that the terminal user issues to allow use of the other commands at his disposal.
CONTINUE:	This is another system procedure command that negates the conditions imposed by the 'pause' command.
END:	This command causes termination of a previous retrieval request and places the terminal in query formulation mode.

The Query Language Command Table (Table 1) is structured as follows:

- Under the command column, there will be a command code abbreviation of one or two characters followed by the symbol "/" and a command word. This means that either the command abbreviation or the command word may be used to request the facilities of this command.

Table 1: Query Language Command Table

COMMAND	OPERANDS
1. D/DISPLAY	U I X/EXPENSE I BBBB I MMY-YY-QZZI C AAAAAAAAAA I E/ENCUMB I CCCCCC FNN I A/ALLOT I C S/SCIENCE C A/ARTS C E/ENGR C C/EDUC C G/GRAD SCH C L/LAW C J/JR DIV C R/AGRI C B/BUS C H/H EC C N/GENERAL
2. U/UPDATE	SEE COMMAND # 1. (THIS COMMAND IS RESERVED FOR FUTURE USE.)
3. PD/PRDSPLY	NNNNNNNNN AAAAAAAAAAAAAAAAAAAAAA
4. M/MONITOR	ALLOTMNT I DB I MMY I NNNN I JV I I RT I
5. SF/SPACE F	NNNN
6. SB/SPACE B	NNNN
7. P/PAUSE	
8. C/CONTINUE	
9. E/END	

- Under the operand column, there may exist several different operands, some of which are optional. The operands listed vertically represent the different parameter options available to the terminal user. Those operands enclosed within brackets are optional parameters and may be omitted. If the bracketed operands are omitted, an assumed value of all is taken, where applicable.

In order to better utilize the system, a description of each operand for each command is given. Each command is described in the same order as it is listed in Table 1.

Display Command

Operand I	Description
U	: This operand requests the retrieval of the budget for the university system. The information is transmitted in the format pictured by Display Format I.
NNNN	: This operand is a four-character numeric department code which requests a departmental budget in the format pictured by Display Format IV.
C AAAAAAAAA	: This operand affords the terminal user the ability to use an eight-character alphabetic code to represent the department in question. The "C" represents a campus code (B=Baton Rouge campus, N=New Orleans campus, S=Shreveport campus).
FNN	: This operand requests the display of university fund budgets, where "NN" represents the numeric fund code.
C S/SCIENCE	: The "C S" or "C SCIENCE" operand requests the display of budgetary information for the college of science. The remainder of the operands conform to the display of academic group budgetary information.

Operand II	Description
X/EXPENSE	: This optional operand defines a request to display the detail expenses of a particular budget.
E/ENCUMB	: This optional operand defines a request to display the detail encumbrances of a particular budget.
A/ALLOTMNT	: This optional operand requests a display of the detailed transactions comprising a particular budget.

Operand III	Description
BBBBB	: This operand (optional) represents a reference to a particular budgetary line item. The five-character numeric code represents the actual code of the budgetary line item.
CCCCCCCC	: This is an eight-character alphabetic representation of the budgetary line item in question. Either of the two operands may be used.

Operand IV	Description
MMYY-QQZZ	: This optional operand restricts retrieval to a particular time frame of reference. "MM" and "QQ" represent a month code in the range 01-12. "YY" and "ZZ" represent a particular year code in the format (19YY or 19ZZ).

Update Command

All operands of this command are identical to those of the display command. The actual implementation of this command is planned at a later date.

PRDSPLY Command

Operand I	Description
NNNNNNNNN	: This operand represents a nine-character numeric employee identification (Social Security number) for retrieval of individual payroll information.
AAAAAAAAAAAAAAAAAAAAA	: This operand is a twenty-two-character alphabetic name of the employee for whom payroll information is requested.

Monitor Command

Operand I	Description
NNNNN	: This operand designates a particular allotment (budgetary line item) for interrogation.
Operand II	Description
DB	: This code identifies the transaction type being interrogated as disbursements.
JV	: This code identifies the transaction type being interrogated as journal vouchers.
RT	: This code identifies the transaction type being interrogated as receipts.

Operand III	Description
MM-YY	: This is a code representing the time frame of reference. MM = Month Code (01-12) and YY = Year Code(19YY).

Space F Command

Operand I	Description
NNNN	: A four-character numeric operand that represents the number of lines to be bypassed. This command is active only after the "pause" command has been issued.

Space B Command

Operand I	Description
NNNN	: A four-character numeric operand that represents the number of lines to be rolled backward. This command is active only after the "pause" command has been issued.

Pause Command

The effect of this command is to cause a suspension of the activities in progress due to procedures being carried out for another command.

Continue Command

This command causes the reinitiation of the suspended procedures of another command. The "continue" command is ignored if a "pause" command has not been issued previously.

End Command

The "end" command causes the termination of the command procedures in progress and places the system in a "query formulation" state.

VI. TERMINAL DISPLAY FORMATS

This section contains examples of the information that will be presented to the terminal user when he formulates a request. The information shown in the display formats do not reflect any actual information relating to budgetary amounts. Not shown in these formats is an area in the upper right hand corner of the display screen that is reserved for system communications. This area is used to reflect the status of the system and terminal at a given moment. The information displayed is technical, and reflects such things as:

- a. Query received
- b. Query being edited
- c. Display screen overflow
- d. Transmission error
- e. Transmission line signal quality
- f. Transmission speed option
- g. Terminal ready.

The information is coded and in a form that is understandable to a systems programmer.

Display Format Types.—Three basic types of display formats are: budget summary, budget detail, and payroll information.

In order to request the different display formats shown in this section, the terminal user must follow these steps:

- a. Log-on (submit proper identification)
- b. Enter information request
- c. Manipulate information as desired
- d. Return to step 2.

There may be intermediate responses between these steps, depending on the restrictions or edit problems encountered.

Budget Summary.—The budget summary format shows the entire budget of a particular unit at the university. The information pictured in Display Formats I, IV, VII, and X in this form:

- a. Reference information (unit name, director and time frame)
- b. Budget item name
- c. Amount allocated to the budgetary line item
- d. Amount spent
- e. Amount encumbered (committed to be spent)
- f. Balance (amount remaining by line item)
- g. Percent of budget remaining

Budget Detail.—The budget detail shown in Display Formats II, III, V, VI, VIII, IX, X, and XII reflects the detailed information that comprises the summary formats. The information contained in these formats is in the form of reference information, detail requested (literal), and detail transactions.

Payroll Information.—The payroll information in Display Format XIII is pertinent information of interest to this university's management. The type of information shown can be categorized in the following ways:

- a. Employee earning sources
- b. Employee earnings to date
- c. Employee rank/classification
- d. Employee experience
- e. Employee correspondence address

There is no doubt that other information could be used, and the design is structured to facilitate any changes.

Display Format I (Figure 8)

This terminal screen image shows the budgetary information that would be useful to individuals such as the president or vice president of the university. It shows the status of the interim budget of the entire university.

This image will be displayed as a result of the following request:

University Budget for – S. U. System					
Director – Dr. J. N. Stone, Jr.					
Period – 73 - 74 Fiscal Year					
Budget Item	Allotted	Expended	Encumbered	Balance	%
Personal Services	15,000,000	14,000,000	0	1,000,000	6
Contractual Svcs	7,000,000	3,000,000	3,000,000	1,000,000	2
Travel	800,000	700,000	0	100,000	13
Materials & Suppl	3,000,000	1,000,000	1,000,000	1,000,000	33
Bookstore	500,000	200,000	200,000	100,000	20
Central Stores	1,000,000	500,000	400,000	100,000	1
Equipment Purchase	8,000,000	3,000,000	4,000,000	1,000,000	13
Major Repairs	800,000	400,000	0	400,000	50
**Totals	36,100,000	22,800,000	8,600,000	4,600,000	15

Figure 8. Display Format I

DISPLAY FUNCTION ACTIVE
D U _____

Upon the receipt and edit of this request, the images shown in Display Format I will be transmitted. If the terminal user is restricted in requesting this information, the following message is transmitted:

REQUEST DENIED
INFORMATION NOT AVAILABLE TO YOU
DISPLAY FUNCTION ACTIVE

Display Formats II and III (Figure 9 and Figure 10)

University Budget for — S. U. System	
Director	— Dr. J. N. Stone, Jr.
Period	— 73-74 Fiscal Year
Expenditures for Bookstore	
Agency	Amount
Southern University Br	20,000.00
School for the Blind	20,000.00
School for the Deaf	100,000.00
Southern University No	20,000.00
Southern University Shreveport	40,000.00
**Total	200,000.00

Figure 9. Display Format II

University Budget for — S. U. System	
Director	— Dr. J. N. Stone, Jr.
Period	— 73-74 Fiscal Year
Encumbrances for Bookstore	
Agency	Amount
Southern University Br	50,000.00
School for the Blind	25,000.00
School for the Deaf	25,000.00
Southern University No	50,000.00
Southern University Shreveport	50,000.00
**Total	200,000.00

Figure 10. Display Format III

The terminal screen images which follow reflect the detail that supports the information in Display Format I. Display Format II shows the detail of the expenditures for the budgetary line item "Bookstore." This format can be requested by the following command:

DISPLAY FUNCTION ACTIVE
D U,X,30115

Display Format III shows the detail of encumbrances for the budgetary line item "Bookstore." This format can be requested by the following command:

DISPLAY FUNCTION ACTIVE
D U,E,30115

Both commands are edited and if the user is not allowed to request this information an appropriate message is returned.

Display Format IV (Figure 11)

This format represents the information available to university department chairpersons. This format shows these individuals the status of their budgets at any given time. The image can be requested by the following command:

DISPLAY FUNCTION ACTIVE
D 2073

The department chairperson has at his or her disposal any budget for the department at any time frame for the last four years.

University Budget for – Computer Center					
Director – R. F. Carey					
Period – 73-74 Fiscal Year					
Budget Item	Allotted	Expended	Encumbered	Balance	%
Personal Services	20,801	19,801	1,000	0	0
Contractual Svcs	101,101	90,101	0	11,000	11
Equip & Supplies	5,000,000	0	4,000,000	1,000,000	20
**Totals	5,121,902	109,902	4,001,000	1,011,000	20

Figure 11. Display Format IV

Display Formats V and VI (Figure 12 and Figure 13)

University Budget for – Computer Center					
Director – R. F. Carey					
Period – 73-74 Fiscal Year					
Expenditures for Contractual Svcs					
Date	Ref #	Invoice	Payee	Check #	Amount
10/01/74	D1236	123456789	A. B. Dick	123456	200.30
10/02/74	D4321	987654321	Xerox	654321	30.00
11/31/74	D0000	098765432	Three M	054320	89,870.70
			**Total		90,101.00

Figure 12. Display Format V

University Budget for – Computer Center					
Director – R. F. Carey					
Period – 73-74 Fiscal Year					
Encumbrances for Contractual Svcs					
Date	P.O. #	Vendor	Ref #	Check #	Amount
09/01/74	0123456P	Fraternal Press	E1234		700.50
10/30/74	0123456P	Fraternal Press	L4231	223456	700.00
		**Total			0.50

Figure 13. Display Format VI

Display Formats V and VI (Figure 12 and Figure 13)

These formats are very similar to Display Formats II and III in that they represent the detail that comprises the summary format. The details involved in these formats are at the transaction level and are pictured as such.

In order to request the display of Format V, a terminal user may follow this pattern:

```
DISPLAY FUNCTION ACTIVE  
D 2073,X,20100
```

In order to request the display of format VI, a terminal user may follow this pattern:

```
DISPLAY FUNCTION ACTIVE  
D 2073,E,20100
```

Display Format VII (Figure 14)

As a result of our current budgetary cycle, the information shown in display format VII is now being prepared. The need still exists for this information and this design presents it to users on a more current basis. To request this information a user would follow these steps:

```
DISPLAY FUNCTION ACTIVE  
D F01
```

Again, the edit functions of the system check the request for restrictions. The philosophy involved in the "restriction check" is that not everyone has a need for all of the information available; therefore, limitations are inserted.

University Budget for – General Fund Director – Dr. J. N. Stone, Jr. Period – 73-74 Fiscal Year					
Budget Item	Allotted	Expended	Encumbered	Balance	%
Personal Services	10,681,701	1,681,701	1,000,000	8,000,000	79
Contractual Svcs	800,000	400,000	0	400,000	50
Travel	600,000	300,000	0	300,000	50
Materials & Suppl	1,000,000	20,000	400,000	580,000	58
Bookstore	900,000	100,000	200,000	599,999	67
Central Stores	900,000	400,000	400,000	100,000	11
Equipment Purchase	3,000,000	2,000,000	500,000	500,000	17
Major Repairs	430,000	300,000	30,000	100,000	24
**Totals	18,311,701	5,201,701	2,530,000	10,579,999	58

Figure 14. Display Format VII

Display Formats VIII and IX (Figure 15 and Figure 16)

These formats are the detail that supports Format VII. The information is basically self-explanatory and can be requested as follows:

DISPLAY FUNCTION ACTIVE
D F01.X,30100

DISPLAY FUNCTION ACTIVE
D F01.E,30100

The queries above request the display of Formats VII and IX, respectively.

University Budget for -- General Fund	
Director	-- Dr. J. N. Stone, Jr.
Period	-- 73-74 Fiscal Year
Expenditures for Materials & Supplies	
Department	Amount
Presidents' Office	5,000.00
Vice President's Office	4,000.00
Comptroller's Office	6,000.00
Registrar's Office	5,000.00
**Total	20,000.00

Figure 15. Display Format VIII

University Budget for -- General Fund	
Director	-- Dr. J. N. Stone Jr.
Period	-- 73-74 Fiscal Year
Encumbrances for Contractual Svcs	
Department	Amount
** No Transactions **	

Figure 16. Display Format IX

Display Format X (Figure 17)

This format is designed to be used by university college deans who need information on the status of their areas' budgets. Presently, no reports exist to inform these persons of their budgetary status. This format allows this need to be satisfied.

In order to request this information a terminal user would do the following:

DISPLAY FUNCTION ACTIVE
D B SCIENCE

University Budget for – College of Science					
Director – Dr. L. White					
Period – 73-74 Fiscal Year					
Budget Item	Allotted	Expended	Encumbered	Balance	%
Personal Services	200,000	90,000	0	110,000	55
Contractual Svcs	200,500	91,111	8,889	100,500	50
Travel	50,000	20,000	0	30,000	60
Materials & Suppl	50,000	10,000	40,000	0	00
Bookstore	10,000	0	0	10,000	100
Central Stores	5,000	4,000	500	500	1
Spcl/Curr Charges	500	0	0	500	100
Equipment Purchase	700,000	500,000	0	200,000	26
Major Repairs	90,000	0	0	90,000	100
** Totals	1,306,000	715,111	49,389	541,500	42

Figure 17. Display Format X

The information shown in Display Format X would then be transmitted.

Display Formats XI and XII (Figure 18 and Figure 19)

These formats present the user with details supporting the college budgets that are available as pictured in Display Format X. The detail is in the form of department expenses or encumbrances within the college. The user is then able to proceed to the next level of detail by using the procedures necessary to request departmental budgets.

To request the information in Display Format XI and Display Format XII, the terminal user might respond as follows:

DISPLAY FUNCTION ACTIVE
D B SCIENCE,X,30200

University Budget for – College of Science	
Director	– Dr. L. White
Period	– 73-74 Fiscal Year
Expenditures for Central Stores	
Department	Amount
Bacteriology	1,000.00
Biology	500.00
Chemistry	200.00
Mathematics	500.00
Physics	1,000.00
Computer Science	800.00
**Total	4,000.00

Figure 18 Display Format XI

University Budget for – College of Science	
Director	– Dr. L. White
Period	– 73-74 Fiscal Year
Encumbrances for Central Stores	
Department	Amount
Bacteriology	250.00
Mathematics	200.00
Physics	50.00
**Total	500.00

Figure 19. Display Format XII

DISPLAY FUNCTION ACTIVE
D B SCIENCE,E,30200

Display Format XIII (Figure 20)

This format is intended to display payroll information. The information shown in the picture represents that data most often referred to by individuals at this institution, not the entire amount of information available. However, the system is designed to allow expansion or deletions depending on user requirements.

To request the information available, a terminal user might respond as follows:

DISPLAY FUNCTION ACTIVE
D 438606752

This response will again be edited and use restrictions imposed.

Payroll Information for -- 438606752 -- Smith, Jesse L						
Current Date -- Oct. 1, 1974						
Employee #	Employee Name		Primary Department		Rank/Job Title	
438-60-6752	Smith, Jesse L		Computer Center		Analyst	
Degree	Marital Status		Secondary Department		Employee Class	
B. S.	Married		Computer Usage Grant		Civil Service	
Experience			Primary Contract Salary		Secondary Contract Salary	
Total	S. U.	Other	Last Year	Current	Last Year	Current
006	005	001	12,000.00	12,100.00	2,000.00	2,000.00
Total Salary		Earnings Year-to-Date		United Givers	Retirement System	Insurance Deduction
14,100.00		Primary	Secondary	Yes	La. State	32.50
		1,000.00	600.00			
ADDRESS						
Home			Alternate			
4326 Algoa Drive			Box 9789 S. U.			
Baker, La. 70714			Baton Rouge, La. 70813			

Figure 20. Display Format XIII

Appendix A — Data Element Dictionary
Retrieval System Elements

No.	Element/Segment	Description	Type	Length
0. 0.0	Budgetary Segment	Segment accessed during budget retrieval		
0. 1.0	Entry Code	Identifies a segment as historic/current	Character	2
0. 2.0	Date	Transaction date (MM DD YY)	Numeric	6
0. 2.1	Month	Month code (01-12)	Numeric	2
0. 2.2	Day	Day (01-31)	Numeric	2
0. 2.3	Year	Year (19YY)	Numeric	2
0. 3.0	Reference Number	Identifies the source of the transaction	Alphanumeric	5
0. 3.1	Source Identification	J=Journal Voucher D=Disbursement, etc.	Alpha	1
0. 3.2	Source Document No.	Form number from which transactions are derived	Numeric	4
0. 4.0	Check Number	Number assigned to face of check	Numeric	6
0. 5.0	Purchase Order Number	Number assigned to a requisition of goods	Alphanumeric	8
0. 5.1	P. O. Prefix	Identifies agency of issue	Alphanumeric	1
0. 5.2	P. O. Number	Number on source documents	Numeric	6
0. 5.3	P. O. Suffix	Identifies type of P. O.	Alphanumeric	1
0. 6.0	Payee Name	Reference name	Alpha	25
0. 7.0	Account Code	Budgetary line item	Numeric	18
0. 7.1	Res-Expand		Numeric	1
0. 7.2	Agency Code		Numeric	1
0. 7.3	Fund Code		Numeric	4
0. 7.4	Account Code		Numeric	4
0. 7.5	Allotment Code		Numeric	5
0. 7.6	Res-Expand		Numeric	1
0. 8.0	Amount	Funds indicated by transactions	Numeric	10
0. 9.0	Check Date	Date that check was written	Numeric	6
0. 9.1	Month	Month subfield	Numeric	2
0. 9.2	Day	Day subfield	Numeric	2

No.	Element/Segment	Description	Type	Length
0. 9.3	Year	Year subfield	Numeric	2
0.10.0	Academic Class	Separates budgets by academic groups	Numeric	2
0.11.0	Payee Identification	A unique code assigned to each payee	A/N	9
1. 0.0	Payroll Segment	Segment accessed during P/R retrieval		
1. 1.0	Entry Code	Identifies segment as historic or current	Character	2
1. 2.0	Date	Date of last pay period	Numeric	6
1. 2.1	Month	Month subfield	Numeric	2
1. 2.2	Day	Day subfield	Numeric	2
1. 2.3	Year	Year subfield	Numeric	2
1. 3.0	Name	Employee name	Alpha	22
1. 4.0	Social Security #	Federal code assigned to each citizen	Numeric	9
1. 5.0	Primary Earnings	Amount earned from basic payroll source	Numeric	7
1. 6.0	Secondary Earnings	Amount earned from secondary sources	Numeric	7
1. 7.0	Rank/Job Title	Position filled by employee	A/N	5
1. 8.0	Degree	Level of education obtained	A/N	5
1. 9.0	Marital Status		Alpha	1
1.10.0	Employee Class	Classification of employee	Alpha	1
1.11.0	Work Experience	Years of employment	Numeric	9
1.11.1	Total Experience	Total work experience	Numeric	3
1.11.2	Experience Here	Work experience at Southern	Numeric	3
1.11.3	Other Experience	Work experience elsewhere	Numeric	3
1.12.0	Primary Earnings	Salary earned from primary payroll sources	Numeric	16
1.12.1	Current Earnings	Total current primary earnings	Numeric	8
1.12.2	Last Year's Earnings	Primary earnings last year	Numeric	8
1.13.0	Secondary Earnings	Salary earned from secondary payroll sources	Numeric	16
1.13.1	Current Earnings	Current secondary earnings	Numeric	8
1.13.2	Last Year's Earnings	Secondary earnings last year	Numeric	8
1.14.0	Total Earnings	Total salary from all sources	Numeric	16

No.	Element/Segment	Description	Type	Length
1.14.1	Current Earnings	Current earnings all sources	Numeric	8
1.14.2	Last Year's Earnings	Total earnings last year	Numeric	8
1.15.0	United Givers	United Givers contribution	Numeric	7
1.16.0	Insurance	Total insurance premium paid	Numeric	7
1.17.0	Retirement	Employee retirement system	Numeric	1
1.18.0	Addresses	Home/alternate addresses	A/N	150
1.18.1	Extra Line	Additional address line	A/N	25
1.18.2	Home Address	Home Street	A/N	25
1.18.3	Home City/State	City/state home address	A/N	25
1.18.4	Alternate Extra Line	Extra alternate address line	A/N	25
1.18.5	Alternate Street	Alternate street address	A/N	25
1.18.6	Alternate City/State	Alternate city/state address	A/N	25

Appendix B — Account Code Cross Reference Table

The contents of this section represent a table of elements of the current account code.

Agency Code

Code	Name	Abbr	Command Usage
1	Main Campus	M	Display --'C' Operand
2	School for the Deaf	D	Display --'C' Operand
3	School for the Blind	B	Display --'C' Operand
4	New Orleans Campus	N	Display --'C' Operand
5	Shreveport Campus	S	Display --'C' Operand

Fund Code

Code	Name	Abbr	Command Usage
01	General Fund	GF	Display --'FNN' Operand
02	Revolving Fund	RF	Display --'FNN' Operand
03	School for the Blind	SB	Display --'FNN' Operand
04	School for the Deaf	SD	Display --'FNN' Operand
05	Agency Fund	AF	Display --'FNN' Operand
06	Lunch Room	LR	Display --'FNN' Operand
07	Plant Fund	PF	Display --'FNN' Operand
08	Grant-in-Aid Fund	GA	Display --'FNN' Operand
09	National Defense Fund	NF	Display --'FNN' Operand
10	College Work Study	CW	Display --'FNN' Operand
12	SUNO General Fund	SF	Display --'FNN' Operand
13	System Revenue Fund	SR	Display --'FNN' Operand
16	SUSB General Fund	SG	Display --'FNN' Operand
17	SUSB Revolving Fund	SV	Display --'FNN' Operand
18	SUSB Agency Fund	SA	Display --'FNN' Operand
19	SUNO Revolving Fund	NR	Display --'FNN' Operand
20	SUNO Agency Fund	NA	Display --'FNN' Operand
25	SUNO National Defense	ND	Display --'FNN' Operand
26	SUNO College Workstudy	NC	Display --'FNN' Operand
27	SUSB National Defense	SN	Display --'FNN' Operand
28	SUSB College Workstudy	SC	Display --'FNN' Operand

General Ledger Account Code

Code	Name	Abbr	Command Usage
1000	General Operating Cash		
1001	City National Bank (G/F)		
1018	Cash in Trust		
1101	Accounts Receivable		
1102	Southern Educational Foundation		
1163	Due from Mutual of Omaha		
1301	Inventory Equipment		
1302	Inventory Livestock		
2020	Due from Revolving Fund		
2030	Due from System Revenue		
2078	Due to/from SUSB CWSP		
2101	Accounts Payable Current Yr.		
2105	Due to State Treasurer		
2201	Due to Retirement System		
2209	Faculty Salary Escrow		
2401	Reserve Doubtful A/R		
2502	Surplus Appropriation		
3000	Budget Income		
3032	Dept of Justice Income		
5000	Budget Expenditures		
5032	MIS Funding Expense		
8002	Budget Encumbrances		
8067	MISC Funding Encumbrances		

Department Codes

Code	Name	Abbr	Command Usage
1100	V/P Business & Finance	V/P FINC	Display AAAAAAAAAA Operand
1101	President's Office	PRES OFC	Display AAAAAAAAAA Operand
1116	Contract Research	CONTR RES	Display AAAAAAAAAA Operand
1201	Student Employment	STUD EMP	Display AAAAAAAAAA Operand
1218	Debate	DEBATE	Display AAAAAAAAAA Operand
2000	V/P Academic Affairs	V/P ACAD	Display AAAAAAAAAA Operand
2201	Graduate School	GRAD SCH	Display AAAAAAAAAA Operand
6000	Major Repairs	MJR REPR	Display AAAAAAAAAA Operand
9007	Property & Equipment	PROPERTY	Display AAAAAAAAAA Operand
2301	Office of the Vice President	V/P SUNO	Display AAAAAAAAAA Operand
2302	Business Office	BUS OFC	Display AAAAAAAAAA Operand
2393	Scholarship	SCHOLAR	Display AAAAAAAAAA Operand
2801	Office of the Dean	V/P SUSB	Display AAAAAAAAAA Operand

Code	Name	Abbr	Command Usage
2802	Business Office	BUS OFC	Display AAAAAAAAAA Operand
2891	Scholarship	SCHOLAR	Display AAAAAAAAAA Operand

Allotment Codes

Code	Name	Abbr	Command Usage
10100	Personal Services	PERS SVC	Display CCCCCCCC
20100	Contractual Services	CONT SVC	Monitor Allotmnt
21100	Traveling	TRAVEL	Display CCCCCCCC
30100	Materials & Supplies	MAT-SUPL	Display CCCCCCCC
30200	Central Stores	CNTL STR	Display CCCCCCCC
40100	Retirement	RETIRE	Display CCCCCCCC
40200	Special Current Changes	SP CHRG	Display CCCCCCCC
50100	Equipment Purchases	EQUIPMENT	Display CCCCCCCC
60100	Major Repairs	MJR REPR	Display CCCCCCCC

Because of the extent of codes existing at the university, the tables listed are incomplete except for the agency and fund code tables. The general ledger account, department, and allotment code tables comprise a list of over 2,000 codes, making a complete list too voluminous for inclusion in this design.

Appendix C Glossary

The field of computer science is an ever changing area, and because of this fact terminology changes from time to time. In an effort to clarify the contents of this design, a list of words/phrases along with their intended meaning is supplied.

ACADEMIC CLASS: An internal university classification that divides fields of pursuit, i.e., College of Science, College of Education, etc.

ACCOUNT CODE: A four-character numeric code that identifies financial transactions as being expense items, income, encumbrances, or other.

AGENCY CODE: A one-character numeric code that separates financial transactions into individual campuses, i.e., Main Campus, Southern University in New Orleans.

ALLOTMENT CODE: A five-character numeric code that identifies a budgetary line item.

BLANK CHARACTER SUPPRESSION: A technique of data transmission which reduces that amount of data transmitted, and reduces the time of transmission by eliminating strings of blank characters.

BUDGETARY SUMMARY IMAGE: A data image which contains totals summarized from detail budget transactions. The format of this image is basically the same as the detail image.

CHECKPOINT: A method by which before and after images of transactions modified are recorded on a separate device for recovery procedures.

DAILY ACCOUNTING ALL-TRANSACTION FILE: A file of accounting transactions that are processed by the computer center in an ordinary work day.

DATA BASE: A collection of files/records/segments from which meaningful information can be derived through computer processes.

DATA DICTIONARY: A pictorial representation of data and its relationship to other data.

DISPLAY FORMAT: A predefined terminal image which provides the guidelines for satisfying retrieval requests.

EDIT: A computer process by which transactions are checked for accuracy.

FUND CODE: A two-character numeric code that classifies a financial transaction as affecting funds received from state sources, federal sources, etc.

IN-HOUSE BATCH: Entering jobs for computer processing at the central computer site, as opposed to entering jobs at a location some distance from the centralized computer.

LOG-OFF: A data transmission term referring to the act of informing the computer system of a terminal user's wish to discontinue use of the terminal.

LOG-ON: A data transmission term referring to the act of informing the computer system of a terminal user's wish to use the facilities of the terminal.

MEGA BYTE: One million bytes or characters.

ORGANIZED UNIVERSITY ACTIVITY: The predefined code assigned to a particular area of concentration (department).

PAYROLL REGISTER FILE: A collection of records containing the basic information on an employee's earnings from payroll sources.

QUERY FORMULATION: The process by which the terminal user develops a request for retrieval.

QUERY LANGUAGE: The command structure through which the terminal user makes a request of the computer system.

REMOTE JOB ENTRY: (RJE) a terminal facility some distance from the central computer, which has the capability of processing transactions.

RESPONSE TIME: The time lapse between the key in of the last character of a message and the receipt of a message from the central computer.

RESTRICTED RETRIEVAL: A security measure imposed on terminal users which prevents retrieval of information that does not affect them.

SCRATCH-PAD: A computer work area used to hold images that may be manipulated by a terminal user.

SEGMENT: A term that can be equal to the concept of a record.

SHUT-DOWN: The computer facility of automatically logging-off a terminal due to inactivity.

SIGN-OFF: See Log-Off

SIGN-ON: See Log-On.